



# UNITED STATES PATENT AND TRADEMARK OFFICE

*un*

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,575	03/25/2004	Kuniyuki Tani	65933-081	5532

7590 02/12/2007  
McDERMOTT, WILL & EMERY  
600 13th Street, N.W.  
Washington, DC 20005-3096

EXAMINER
----------

HERNANDEZ, WILLIAM

ART UNIT	PAPER NUMBER
----------	--------------

2816

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/12/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/808,575

Applicant(s)

TANI ET AL.

Examiner

William Hernandez

Art Unit

2816

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 1,9 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-4,10,12,13 and 18-21 is/are rejected.
- 7) ☒ Claim(s) 5-8 and 14-17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Applicant's amendment filed on 11/21/06 has been received and entered in the case. The amendment and arguments presented therein overcome the prior art rejections, the indefiniteness rejections and the informality objections, and therefore, these are withdrawn. In view of the current reconsideration, new grounds of rejections are needed as set forth below. This action is NON-FINAL.

#### ***Claim Objections***

1. Claim 21 objected to because of the following informalities:

In line 2 of claim 21, the word --first-- should be inserted before "conversion unit".

Appropriate correction is required.

#### ***Specification***

2. The title of the invention ("BIAS VOLTAGE GENERATING CIRCUIT, AMPLIFIER CIRCUIT, AND PIPELINED AD CONVERTER CAPABLE OF SWITCHING CURRENT DRIVING CAPABILITIES") is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: *Pipelined AD Converter Capable of Switching Current Driving Capabilities.*

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 10, 18 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Regarding claims 10 and 18, the word “can” (line 7 in claim 10 and line 13 in claim 18) is not a definitive limitation. As a result, the claim is not precise enough to determine whether the circuit performs the recited feature or not.

6. Regarding the last paragraph of claim 10 and claim 19, it is not clear what is meant by “transistors having different size ratios”, or “having generally the same size ratio”. Two objects or values can only have *one* ratio with respect to one another, not *two* ratios. Applicant can clarify the claim language by saying, “Width/Length ratios” instead of the more vague “size ratios” for example.

7. Regarding claim 18, the recited limitations concerning the details of the driving unit are not described properly with respect to the drawings and the specification. There is no mention in the specification of a driving unit with a plurality of bias circuits connected in parallel that can output first and second bias voltages that are different from each other. The Wilson circuit (Fig. 7), which the claim alludes to, and later declared as the bias circuit in claim 19, is the only driving unit disclosed by the Applicant which can output two different bias voltages, but it is not comprised of any parallel-connected bias circuits.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Stark et al. (USP 6,163,178).

Stark et al.'s Fig. 5 shows a bias voltage generating circuit comprising:

a driving unit which generates a bias voltage (ground) to be applied to a predetermined load (resistor shown in Fig. 3 or whatever load gets coupled to channel 130), and

a control unit (the Current Control block shown in Fig. 4) which switches a current driving capability of the driving unit according to a variation in an amount of current required (predetermined; col. 3: 46-52) for the load in a period for applying the bias voltage to the load (whenever it has been determined to apply the biasing)

wherein the driving unit includes a plurality of bias circuits (162-174) which are connected in parallel and have different current driving capabilities (transistor stacks

Art Unit: 2816

162-174 are binary weighted giving each of them a different current driving capability; col. 6: 62-67 and col. 7: 1-5), and

the control unit switches the current driving capability by controlling the number of circuits to operate out of the plurality of bias circuits (the transistor stacks are controlled independently from one another, essentially changing the number of transistor stacks turned on as output current is varied),

wherein the plurality of bias circuits output the same bias voltage (all transistor stacks are tied to ground) as called for in claim 1.

As per claim 4, a mere recitation of the intended use of the claimed invention is not given any patentable weight since Stark et al.'s structure is capable of performing the intended use.

10. Claim 3 is rejected under 35 U.S.C. 102(e) as being anticipated by Kuge (USP 6,777,976 B2).

Kuge's Fig. 16 shows a bias voltage generating circuit comprising:

a driving unit which generates a bias voltage (voltage at output node 14) to be applied to a predetermined load (whatever is coupled to said output node), and

a control unit (60) which switches a current driving capability of the driving unit according to a variation in an amount of current required for the load in a period for applying the bias voltage to the load (whenever it has been predetermined to apply the biasing)

wherein the driving unit includes a plurality of bias circuits (11a-11n) which are connected in parallel and have the same current driving capabilities (Kuge teaches that transistors 11a-11n may have the same size; col. 17: 62-64), and

the control unit switches the current driving capability by controlling the number of circuits to operate out of the plurality of bias circuits (the number of transistors 11a-11n turned on is selectively set by register circuit 60; col. 18: 18-23).

11. Claims 20 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Cusinato (USPAP 2004/0046684 A1).

Cusinato's Figs. 3 and 4 show a pipelined AD converter (40) having a plurality of stages of conversion units (44a-e) which generate several bits of digital values of descending order from an input analog voltage, respectively, the AD converter comprising:

an amplifier unit (46) which repeats an auto-zero operation and an amplification operation alternately;

a driving unit (42) which supplies the amplifier unit with a bias voltage; and

a control unit (16) which switches a current driving power of the driving unit according to a variation in the amount of current required between the auto-zero operation and the amplification operation of the amplifier unit ( $\P$  [0030]),

the control unit controlling the current driving capability so as to drive at least any one of the plurality of stages of conversion units with a relatively high current ( $I_{\max}$ ) and drive the other conversion units with a lower current ( $I_{\min}$ ).

Regarding claim 21, Cusinato discloses the pipelined AD converter according to claim 20, wherein the control unit controls the current driving capability so as to drive the first conversion unit at the initial stage with a relatively high current and drive the second and subsequent conversion units with a lower current (since each stage can receive either  $I_{\min}$  or  $I_{\max}$ , depending on the current phase, the recited configuration can be performed by Cusinato's invention; ¶ [0025]).

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cusinato in view of Stark et al.

Cusinato's Figs. 3 and 4 show an amplifier unit (46) which repeats an auto-zero operation and an amplification operation alternately;

a driving unit (42) which supplies the amplifier unit with a bias voltage; and

a control unit (16) which switches the current driving capability of the driving unit according to a variation in an amount of current required between the auto-zero operation and the amplification operation of the amplifier unit (¶ [0030]).

Cusinato does not show the details of the driving unit as called for in claim 12. Stark et al. shows the recited driving unit of claim 12 as applied to claim 2 above. Stark



Art Unit: 2816

et al. teaches that having an adjustable slew rate and operating current has the benefit of being able to match the delays and slew rates of the rest of the circuit. Therefore, it would have been obvious to a person skilled in the art at the time the invention was made to replace the driving unit of Cusinato's invention with Stark et al.'s driving unit as per his teachings for the purpose of having a more stable output current which minimizes reflections from other drivers on the bus.

14. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cusinato in view of Kuge.

Cusinato's Figs. 3 and 4 show an amplifier unit (46) which repeats an auto-zero operation and an amplification operation alternately;

a driving unit (42) which supplies the amplifier unit with a bias voltage; and

a control unit (16) which switches the current driving capability of the driving unit according to a variation in an amount of current required between the auto-zero operation and the amplification operation of the amplifier unit (§ [0030]).

Cusinato does not show the details of the driving unit as called for in claim 13. Kuge shows the recited driving unit of claim 13 as applied to claim 3 above. Kuge teaches that adjustable driving unit can achieve optimal driving power (col. 18: 18-23). Therefore, it would have been obvious to a person skilled in the art at the time the invention was made to replace the driving unit of Cusinato's invention with Kuge's driving unit as per his teachings for the purpose of optimizing driving power.

***Response to Arguments***

15. Applicant's arguments with respect to claims 2-4 have been considered but are moot in view of the new grounds of rejection.

***Allowable Subject Matter***

16. Claims 5-8 and 14-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. Claims 10, 18 and 19 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William Hernandez whose telephone number is (571) 272-8979. The examiner can normally be reached on Mon.-Fri. 8:30AM-5:00PM.

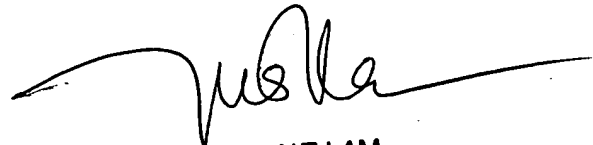
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy P. Callahan can be reached on (571) 272-1740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

  
WILLIAM HERNANDEZ

Art Unit: 2816

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WH



TUAN T. LAM  
PRIMARY EXAMINER